

REMARKS

This application has been reviewed in light of the Office Action dated January 11, 2006. Claims 1, 4-17, 19-23, and 29-36 are presented for examination. Claims 2, 3, 18, and 24-28 have been cancelled, without prejudice or disclaimer of the subject matter presented therein. Claims 1, 4, 19 and 20 have been amended to define more clearly what Applicants regard as their invention and minor formal changes have been made to Claims 11-13 not affecting their scope. New Claims 29-36 have been added to provide Applicants with a more complete scope of protection. Claims 1, 19, and 20 are in independent form. Favorable reconsideration is requested.

Claims 1-3, 19 and 21-23 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,333,016 (*Resasco et al.*). Claims 1, 2, 5, 6, 9-13, 15-17 and 19-23 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,171,560 (*Tennent*). Claim 4 has been rejected under 35 U.S.C. 103(a) as being unpatentable over *Resasco et al.* Claims 5-8 have been rejected under 35 U.S.C. 103(a) as being unpatentable over *Resasco et al.* in view of U.S. Patent No. 4,948,573 (*Nadkarni et al.*).

Independent Claim 1 has been amended to incorporate features formerly recited in Claim 3, and former step (B) has been removed from Claim 1 (and replaced with a new step (B)). For example, as amended, Claim 1 recites, in part, (A) applying a liquid including dispersed particles onto a substrate, and (B) forming a carbon fiber by contacting the particles applied on the substrate with a carbon containing gas. Each of the particles

contains (i) Pd and (ii) at least one element selected from the group consisting of Fe, Co, Ni, Y, Rh, Pt, La, Ce, Pr, Nd, Gd, Tb, Dy, Ho, Er, and Lu.

The Office Action rejected former Claim 3 based on Rescasco.

The Office Action asserts that Rescasco teaches “elements . . . including Pd and at least one element selected from the group consisting of Fe, Co, Ni, Y, Rh, Pt, La, Ce, Pr, Nd, Gd, Tb, Dy, Ho, Er, and Lu.” However, the particle disclosed in Rescasco is composed of (1) VIII group elements (Co, Ni, Ru, Rh, Pd, Ir, Pt and a mixture thereof) and (2) VI group elements (Cr, W, Mo and the mixture thereof). That is, although Pd is included in VIII group elements of the item (1) of Rescasco, item (2) of Rescasco, consisting of Cr, W, Mo, does not teach or suggest Fe, Co, Ni, Y, Rh, Pt, La, Ce, Pr, Nd, Gd, Tb, Dy, Ho, Er, and Lu as recited in amended Claim 1. Nothing has been found, or pointed out, in Rescasco that would teach or suggest the above-highlighted features of Claim 1. Accordingly, Claim 1 is believed to be clearly patentable over that reference.

Tennent refers to a variety of transition metal-containing particles being suitable as catalysts when used with an appropriate combination of reaction parameters. The metal-containing particle comprises a particle having a diameter between about 3.5 and about 70 nanometers and contains iron, cobalt, or nickel, or an alloy or mixtures thereof. Apparently, suitable particles may also be derived from metal salts that thermally decompose to metallic particles or metallic oxide particles at temperatures equal to or below fibril formation temperatures. Such metal salts include carbonates, bicarbonates, nitrates, citrates, and oxalates. See, e.g., col. 8, lines 25-37.

However, nothing has been found, or pointed out, in Tennent that would teach or suggest the above-highlighted materials of the particles recited in Claim 1. Therefore, Claim 1 is believed to be clearly patentable over Tennent as well.

Applicants now offer the following comments with regard to Claim 19. Claim 19 recites a method of producing an electron-emitting device having a carbon fiber. The method comprises (A) applying a liquid including dispersed particles containing a catalytic metal onto a substrate, and (B) forming a carbon fiber by contacting the particles applied on the substrate with a carbon containing gas. The particles are contained by a ratio of 1 g/L or less with respect to the liquid.

The Office Action cited col. 7, lines 1-2 of Tennent as support for the rejection of Claim 19. However, this portion of Tennent merely discloses the ratio between a catalyst and a carbon-contained compound used as a raw material of a carbon fiber.

(Emphasis added) In Claim 19, on the other hand, a liquid including dispersed particles containing a catalytic metal is applied onto a substrate, and the particles are contained by a ratio of 1 g/L or less with respect to the liquid. Nothing has been found, or pointed out, in Tennent, that would teach or suggest these features. Accordingly, Claim 19 is believed to be clearly patentable over Tennent.

Independent Claim 20 will now be addressed. That claim recites a method of producing an electron-emitting device having a carbon fiber. The method comprises

(A) applying a liquid including a polymer and a plurality of catalytic particles onto a substrate, and (B) forming a carbon fiber by contacting the catalytic particles with a carbon containing gas.

The Office Action cited Tennent as teaching applying a water-soluble polymer solution (polystyrene) in which particles are dispersed on a substrate, and cited Examples 34-37 of Tennent as support.

However, in Applicants' view, although Tennent discloses that the catalytic particles are covered with a polymer as described at column 9, lines 22-25 and 31-33, this reference is not understood to teach or suggest that particles covered with a polymer are dispersed in a liquid. The Examples 34-37 cited in the Office Action merely disclose a polymer in which catalytic particles containing carbon are dispersed.

According to an aspect of the invention to which Claim 20 relates, on the other hand, liquid including the polymer and catalytic particles is applied on a substrate, and a carbon fiber is formed using the applied catalytic particles. Nothing has been found, or pointed out, in Tennent that would teach or suggest these features involving a liquid including a polymer and catalytic particles, as set forth in Claim 20. Accordingly, that claim is believed to be clearly patentable over Tennent.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration or reconsideration, as the case may be, of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Frank A. DeLucia', is written over a horizontal line.

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